Appendix A. (*Continued*) Administrative, environmental, and respiratory-protection controls for selected health-care settings

Setting	Administrative controls*	Environmental controls†	Respiratory-protection controls§
Outpatient Settings in Which Patients with Suspected or Confirmed Infectious TB Disease are Expected to be Encountered			
Dental-care settings	• If possible, postpone dental procedures of patients with suspected or confirmed infectious TB disease until the patient is determined not to have TB disease or to be noninfectious.	• Treat patients with suspected or confirmed infectious TB disease in a room that meets requirements for an AII room (see Supplement, Environmental Controls; Table 2). • Air-cleaning technologies such as HEPA filtration and (e.g., HEPA filtration and UVGI) can be used to increase the number of equivalent ACH (see Supplement, Environmental Controls).	• For dental staff performing procedures on a patient with suspected or confirmed infectious TB disease, at least N95 disposable respirators should be worn.

Please note: All patients with suspected TB infection are immediately referred out for treatment and are allowed back into the facility only after they have received medical clearance. If they need emergency dental treatment before they are cleared, they are referred to a dental facility that has proper environmental controls.

Appendix B. Tuberculosis (TB) risk assessment worksheet

This model worksheet should be considered for use in performing TB risk assessments for health-care settings and nontraditional facility-based settings. Facilities with more than one type of setting will need to apply this table to each setting.

Scoring: ✓ or Y = Yes X or N = No NA = Not Applicable

_____ **1. Incidence of TB (See attached form)**

a. What is the incidence of TB in your community (county or region served by the health-care setting), and how does it compare with the state and national average?

b. What is the incidence of TB in your facility and specific settings, and how do those rates compare? (Incidence is the number of TB cases in your community during the previous year. A rate of TB cases per 100,000 persons should be obtained for comparison.)* This information can be obtained from the state or local health department.

Rate

Community _____
State _____
National _____
Facility _____
Department 1 _____
Department 2 _____
Department 3 _____

N c. Are patients with suspected or confirmed TB disease encountered in your setting (inpatient and outpatient)?

1) If yes, how many are treated in your health-care setting in 1 year? (Review laboratory data, infection-control records, and databases containing discharge diagnoses for this information.)

	No. patients	
Year	**Suspected**	**Confirmed**
1 year ago	0	0
2 years ago	0	0
5 years ago	0	0

2) If no, does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease? YES-SEE ATTACHED PLAN

d. Currently, does your health-care setting have a cluster of persons with confirmed TB disease that might be a result of ongoing transmission of *Mycobacterium tuberculosis*? NO

2. Risk Classification

a. Inpatient settings **N/A**

1) How many inpatient beds are in your inpatient setting?

Quantity _____

2) How many patients with TB disease are encountered in the inpatient setting in 1 year? (Review laboratory data, infection-control records, and databases containing discharge diagnoses.)

Previous year _____
5 years ago _____

3) Depending on the number of beds and TB patients encountered in 1 year, what is the risk classification for your inpatient setting?

___ Low risk
___ Medium risk
___ Potential ongoing transmission

4) Does your health-care setting have a plan for triaging patients with suspected or confirmed TB disease?

b. Outpatient settings

1) How many TB patients are evaluated at your outpatient setting in 1 year? (Review laboratory data, infection-control records, and databases containing discharge diagnoses for this information.)

Previous year 0
5 years ago 0

N 2) Is your health-care setting a TB clinic? (If yes, a classification of at least medium risk is recommended.)

N 3) Does evidence exist that a high incidence of TB disease has been observed in the community that the health-care setting serves?

N 4) Does evidence exist of person-to-person transmission in the health-care setting? (Use information from case reports. Determine if any TST or blood assay for *M. tuberculosis* [BAMT] conversions have occurred among health-care workers [HCWs].)

N 5) Does evidence exist that ongoing or unresolved health-care–associated transmission has occurred in the health-care setting (based on case reports)?

N 6) Does a high incidence of immunocompromised patients or HCWs in the health-care setting exist?

N 7) Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?

Year encountered _____

8) When was the first time a risk classification was done for your health-care setting?

Date of classification

N 9) Considering the items above, would your health-care setting need a higher risk classification?

Appendix B. (*Continued*)Tuberculosis (TB) risk assessment worksheet

N — 10) Depending on the number of TB patients evaluated in 1 year, what is the risk classification for your outpatient setting (see Appendix C)?
X Low risk
___Medium risk
___ Potential ongoing transmission

Y — 11) Does your health-care setting have a plan for the triage of patients with suspected or confirmed TB disease? SEE ATTACHED PLAN

c. Nontraditional facility-based settings

1) How many TB patients are encountered at your setting in 1 year?
Previous year 0
5 years ago 0

N — 2) Does evidence exist that a high incidence of TB disease has been observed in the community that the setting serves?

N — 3) Does evidence exist of person-to-person transmission in the setting?

N — 4) Have any recent TST or BAMT conversions occurred among staff or clients?

N — 5) Is there a high incidence or prevalence of immunocompromised patients or HCWs in the setting?

N — 6) Have patients with drug-resistant TB disease been encountered in your health-care setting within the previous 5 years?
Year encountered _____

7) When was the first time a risk classification was done for your setting?
Date of classification _____

N — 8) Considering the items above, would your setting require a higher risk classification?

Y — 9) Does your setting have a plan for the triage of patients with suspected or confirmed TB disease?

Low risk — 10) Depending on the number of patients with TB disease who are encountered in a nontraditional setting in 1 year, what is the risk classification for your setting (see Appendix C)?
X Low risk
___ Medium risk
___ Potential ongoing transmission

3. Screening of HCWs for *M. tuberculosis* Infection

Y — a. Does the health-care setting have a TB screening program for HCWs?

If yes, which HCWs are included in the TB screening program? (check all that apply)

x All employees are screened at the time of initial employment and/or after an exposure incidence

Y — b. Is baseline skin testing performed with two-step TST for HCWs (yes, at time of initial emp)

Y — c. Is baseline testing performed with QuantiFERON®-TB or other BAMT for HCWs?

d. How frequently are HCWs tested for *M. tuberculosis* infection?
Frequency INIT EMPL/EXPOSURE

Y — e. Are *M. tuberculosis* infection test records maintained for HCWs?

Y — f. Where are test records for HCWs maintained? With employee health records

___ — g. Who maintains the records?

h. If the setting has a serial TB screening program for HCWs to test for *M. tuberculosis* infection, what are the conversion rates for the previous years?† N/A

i. Has the test conversion rate for *M. tuberculosis* infection been increasing or decreasing, or has remained the same over the previous 5 years? (check one)
___Increasing it
___Decreasing
x No change in previous 5 years

Appendix B. (*Continued*)Tuberculosis (TB) risk assessment worksheet

N j. Do any areas of the health-care setting (e.g., waiting rooms or clinics) or any group of HCWs (e.g., laboratory workers, emergency department staff, respiratory therapists, and HCWs who attend bronchoscopies) have a test conversion rate for *M. tuberculosis* infection that exceeds the health-care setting's annual average? If yes, list.

Rate _____

N k. For HCWs who have positive test results for *M. tuberculosis* infection and who leave employment at the health setting, are efforts made to communicate test results and recommend follow-up of latent TB infection treatment with the local health department or their primary physician?

4. TB Infection-Control Program

Y a. Does the health-care setting have a written TB infection-control plan?

b. Who is responsible for the infection-control program? OSHA OFFICER

c. When was the TB infection-control plan first written? 2005

d. When was the TB infection-control plan last reviewed or updated? ANNUALLY

N e. Does the written infection-control plan need to be updated based on the timing of the previous update (i.e., >1 year, changing TB epidemiology of the community or setting, the occurrence of a TB outbreak, change in state or local TB policy, or other factors related to a change in risk for transmission of *M. tuberculosis*)? NEVER HAD OUTBREAKS-LOW RISK FACILITY

N f. Does the health-care setting have an infection-control committee (or another committee with infection-control responsibilities)? ALL INFECTION CONTROL ISSUES HANDLED BY OSHA OFFICER

1) If yes, which groups are represented on the infection-control committee? (check all that apply)

___ Physicians
___ Nurses
___ Epidemiologists
___ Engineers
___ Pharmacists
___ Laboratory personnel
___ Health and safety staff
___ Administrator
___ Risk assessment
___ Quality control
___ Others (specify)

2) If no, what committee is responsible for infection control in the setting? OSHA OFFICER

Name _____

5. Implementation of TB Infection-Control Plan Based on Review by Infection-Control Committee (no committee-OSHA control officer implements all infection control plans, with consultation with doctor and other employees, if necessary)

Y a. Has a person been designated to be responsible for implementing an infection-control plan in your health-care setting? If yes, list the name. (OSHA CONTROL OFFICER)

b. Based on a review of the medical records, what is the average number of days for the following:

c. __ Presentation of patient until collection of specimen.
____ Specimen collection until receipt by laboratory.
____ Receipt of specimen by laboratory until smear results are provided to health-care provider.
____ Diagnosis until initiation of standard antituberculosis treatment.
____ Receipt of specimen by laboratory until culture results are provided to health-care provider.
____ Receipt of specimen by laboratory until drug-susceptibility results are provided to health-care provider.
____ Receipt of drug-susceptibility results until adjustment of antituberculosis treatment, if indicated.
____ Admission of patient to hospital until placement in airborne infection isolation (AII).

Means _____

Mechanisms _____

d. Through what means (e.g., review of TST or BAMT conversion rates, patient medical records, and time analysis) are lapses in infection control recognized? CONSTANTLY MONITORED

e. What mechanisms are in place to correct lapses in infection control? IMMEDIATELY CORRECTED

Y e. Based on measurement in routine QC exercises, is the infection-control plan being properly implemented?

Y f. Is ongoing training and education regarding TB infection-control practices provided for HCWs?

Appendix B. (*Continued*)Tuberculosis (TB) risk assessment worksheet

6. Laboratory Processing of TB-Related Specimens, Tests, and Results Based on Laboratory Review N/A

a. Which of the following tests are either conducted in-house at your health-care setting's laboratory or sent out to a reference laboratory? (check all that apply)

In-house	Sent out	
____	____	Acid-fast bacilli (AFB) smears
____	____	Culture using liquid media (e.g., Bactec and MB-BacT)
____	____	Culture using solid media
____	____	Drug-susceptibility testing
____	____	Nucleic acid amplification testing

b. What is the usual transport time for specimens to reach the laboratory for the following tests?
AFB smears _____
Culture using liquid media (e.g., Bactec, MB-BacT) _____
Culture using solid media _____
Drug-susceptibility testing _____
Nucleic acid amplification testing _____
Other (specify) _____

_____ c. Does the laboratory at your health-care setting or the reference laboratory used by your health-care setting report AFB smear results for all patients within 24 hours of receipt of specimen? What is the procedure for weekends?

_____

7. Environmental Controls N/A-IMMEDIATELY REFER ALL CASES OUT-DON'T HAVE ADEQUATE RESP. PROTECTION SO ALL SUSPECTED CASES ARE IMEMDIATELY REFERRED OUT

a. Which environmental controls are in place in your health-care setting? (check all that apply and describe)

Environmental control	Description
____ All rooms	_____
____ Local exhaust ventilation (enclosing devices and exterior devices)	_____
____ General ventilation (e.g., single-pass system, recirculation system)	_____
____ Air-cleaning methods (e.g., high efficiency particulate air [HEPA] filtration and ultraviolet germicidal irradiation [UVGI])	_____

b. What are the actual air changes per hour (ACH) and design for various rooms in the setting?

Room	ACH	Design

c. Which of the following local exterior or enclosing devices such as exhaust ventilation devices are used in your health-care setting? (check all that apply)
___ Laboratory hoods
___ Booths for sputum induction
___ Tents or hoods for enclosing patient or procedure

d. What general ventilation systems are used in your health-care setting? (check all that apply)
___ Single-pass system
___ Variable air volume
___ Constant air volume
___ Recirculation system
___ Other _____

e. What air-cleaning methods are used in your health-care setting? (check all that apply)

HEPA filtration	UVGI
___ Fixed room-air recirculation systems	___Duct irradiation
___ Portable room-air recirculation systems	___Upper-air irradiation
	___ Portable room-air cleaners

Appendix B. (*Continued*)Tuberculosis (TB) risk assessment worksheet

f. How many AII rooms are in the health-care setting? Quantity _____

g. What ventilation methods are used for AII rooms? (check all that apply)
Primary: (general ventilation)
___ Single-pass heating, ventilating, and air conditioning (HVAC)
___ Recirculating HVAC systems
Secondary (methods to increase equivalent ACH):
___ Fixed room recirculating units
___ HEPA filtration
___ UVGI
___ Other
(specify)_____

_____ h. Does your health-care setting employ, have access to, or collaborate with an environmental engineer (e.g., professional engineer) or other professional with appropriate expertise (e.g., certified industrial hygienist) for consultation on design specifications, installation, maintenance, and evaluation of environmental controls?

_____ i. Are environmental controls regularly checked and maintained with results recorded in maintenance logs?

_____ j. Is the directional airflow in AII rooms checked daily when in use with smoke tubes or visual checks?

_____ k. Are these results readily available?

l. What procedures are in place if the AII room pressure is not negative?

_____

_____ m. Do AII rooms meet the recommended pressure differential of 0.01-inch water column negative to surrounding structures?

8. Respiratory-Protection Program N/A (ALL SUSPECTED PATIENTS ARE IMMEDIATELY REFERRED OUT)

_____ a. Does your health-care setting have a written respiratory-protection program?

b. Which HCWs are included in the respiratory-protection program? (check all that apply)
___ Physicians
___ Mid-level practitioners (NPs and PAs)
___ Nurses
___ Administrators
___ Laboratory personnel
___ Contract staff
___ Construction or renovation staff
___ Service personnel
___ Janitorial staff
___ Maintenance or engineering staff
___ Transportation staff
___ Dietary staff
___ Students
___ Others (specify) _____

c. Are respirators used in this setting for HCWs working with TB patients? If yes, include manufacturer, model, and specific application (e.g., ABC model 1234 for bronchoscopy and DEF model 5678 for routine contact with infectious TB patients).

Manufacturer	Model	Specific application

_____ d. Is annual respiratory-protection training for HCWs performed by a person with advanced training in respiratory protection?

_____ e. Does your health-care setting provide initial fit testing for HCWs? If yes, when is it conducted? Date _____

_____ f. Does your health-care setting provide periodic fit testing for HCWs? If yes, when and how frequently is it conducted? Date _____ Frequency _____

g. What method of fit testing is used? Method _____

_____ h. Is qualitative fit testing used?

_____ i. Is quantitative fit testing used?

Appendix B. (*Continued*)Tuberculosis (TB) risk assessment worksheet

9. Reassessment of TB Risk

a. How frequently is the TB risk assessment conducted or updated in the health-care setting? ANNUALLY

b. When was the last TB risk assessment conducted? DURING LAST YEAR'S OSHA UPDATE Date: _____

c. What problems were identified during the previous TB risk assessment? NONE

d. What actions were taken to address the problems identified during the previous TB risk assessment?

_____

_____

_____

_____

_____

N e. Did the risk classification need to be revised as a result of the last TB risk assessment?

* If the population served by the health-care facility is not representative of the community in which the facility is located, an alternate comparison population might be appropriate.

† Test conversion rate is calculated by dividing the number of conversions among HCWs by the number of HCWs who had previous negative results during a certain period (see Supplement, Surveillance and Detection of *M. tuberculosis* infections in Health-Care Settings).

Appendix C. Risk classifications for health-care settings that serve communities with high incidence of tuberculosis (TB) and recommended frequency of screening for *Mycobacterium tuberculosis* infection among health-care workers (HCWs)*

	Risk classification†		
Setting	**Low risk**	**Medium risk**	**Potential ongoing transmission§**
Inpatient <200 beds	<3 TB patients/year	≥3 TB patients/year	Evidence of ongoing *M. tuberculosis* transmission, regardless of setting
Inpatient ≥200 beds	<6 TB patients/year	≥6 TB patients/year	
Outpatient; and nontraditional facility-based	<3 TB patients/year	≥3 TB patients/year	
TB treatment facilities	Settings in which • persons who will be treated have been demonstrated to have latent TB infection (LTBI) and not TB disease • a system is in place to promptly detect and triage persons who have signs or symptoms of TB disease to a setting in which persons with TB disease are treated • no cough-inducing or aerosol-generating procedures are performed	Settings in which • persons with TB disease are encountered • criteria for low risk is not otherwise met	
Laboratories	Laboratories in which clinical specimens that might contain *M. tuberculosis* are not manipulated	Laboratories in which clinical specimens that might contain *M. tuberculosis* are manipulated	
Recommendations for Screening Frequency			
Baseline two-step TST or one BAMT¶	Yes, for all HCWs upon hire	Yes, for all HCWs upon hire	Yes, for all HCWs upon hire
Serial TST or BAMT screening of HCWs	No**	Every 12 months††	As needed in the investigation of potential ongoing transmission§§
TST or BAMT for HCWs upon unprotected exposure to *M. tuberculosis*	Perform a contact investigation (i.e., administer one TST as soon as possible at the time of exposure, and, if the TST result is negative, place another TST 8–10 weeks after the end of exposure to *M. tuberculosis*)¶¶		

* Health-care workers (HCWs) refers to all paid and unpaid persons working in health-care settings who have the potential for exposure to *M. tuberculosis* through air space shared with persons with TB disease.

† Settings that serve communities with a high incidence of TB disease or that treat populations at high risk (e.g., those with human immunodeficiency virus infection or other immunocompromising conditions) or that treat patients with drug-resistant TB disease might need to be classified as medium risk, even if they meet the low-risk criteria.

§ A classification of potential ongoing transmission should be applied to a specific group of HCWs or to a specific area of the health-care setting in which evidence of ongoing transmission is apparent, if such a group or area can be identified. Otherwise, a classification of potential ongoing transmission should be applied to the entire setting. This classification should be temporary and warrants immediate investigation and corrective steps after a determination has been made that ongoing transmission has ceased. The setting should be reclassified as medium risk, and the recommended timeframe for this medium risk classification is at least 1 year.

¶ All HCWs should have a baseline two-step tuberculin skin test (TST) or one blood assay for *M. tuberculosis* (BAMT) result at each new health-care setting, even if the setting is determined to be low risk. In certain settings, a choice might be made to not perform baseline TB screening or serial TB screening for HCWs who 1) will never be in contact with or have shared air space with patients who have TB disease (e.g., telephone operators who work in a separate building from patients) or 2) will never be in contact with clinical specimens that might contain *M. tuberculosis*. Establishment of a reliable baseline result can be beneficial if subsequent screening is needed after an unexpected exposure to *M. tuberculosis*.

** HCWs whose duties do not include contact with patients or TB specimens do not need to be included in the serial TB screening program.

†† The frequency of testing for infection with *M. tuberculosis* will be determined by the risk assessment for the setting.

§§ During an investigation of potential ongoing transmission of *M. tuberculosis*, testing for *M. tuberculosis* infection should be performed every 8–10 weeks until lapses in infection controls have been corrected and no further evidence of ongoing transmission is apparent.

¶¶ Procedures for contact investigations should not be confused with two-step TST, which is used for newly hired HCWs.

Appendix E. Tuberculosis (TB) Internet addresses

CDC Websites

CDC	http://www.cdc.gov
Division of Tuberculosis Elimination (DTBE)	http://www.cdc.gov/tb
Major TB Guidelines	http://www.cdc.gov/nchstp/tb/pubs/mmwrhtml/maj_guide.htm
State TB Program Contact Information	http://www.cdc.gov/nchstp/tb/pubs/tboffices.htm
TB Education and Training Resources	http://www.findtbresources.org
TB Program	http://www.cdc.gov/nchstp/tb/tbwebsites.htm
Division of AIDS, STD, and TB Laboratory Research	http://www.cdc.gov/ncidid/dastlr/TB/default.htm
National Center for Infectious Diseases (NCID)	http://www.cdc.gov/ncid
National Institute for Occupational Safety and Health (NIOSH)	http://www.cdc.gov/niosh/homepage.html
Respirator Information	http://www.cdc.gov/niosh/npptl/topics/respirators
CDC/NIOSH Certified Equipment List (CEL)	http://www.cdc.gov/niosh/npptl/topics/respirators/cel
CDC/NIOSH-Approved Disposable Particulate Respirators (Filtering Facepieces)	http://www.cdc.gov/niosh/npptl/respirators/disp_part/particlist.html
Division of Healthcare Quality Promotion	http://www.cdc.gov/ncidod/hip/enviro/guide.htm
Emergency Preparedness and Response	http://www.bt.cdc.gov

Other U.S. Federal Government Agencies

National Institutes of Health (NIH)	http://www.nih.gov
National Heart, Lung, and Blood Institute	http://www.nhlbi.nih.gov/funding/training/tbaa/index.htm
National Institute of Allergy and Infectious Diseases (NIAID)	http://www.niaid.nih.gov/dmid/tuberculosis
AIDSinfo	http://www.aidsinfo.nih.gov/guidelines
Occupational Safety and Health Administration (OSHA)	http://www.osha.gov; www.osha.gov/qna.pdf
Tuberculosis (OSHA)	http://www.osha.gov/SLTC/tuberculosis/index.html
Recordkeeping (OSHA)	http://www.osha.gov/SLTC/respiratoryprotection/index.html
Respiratory Protection (OSHA)	http://www.osha.gov/recordkeeping
Ryan White Care Act/Wisconsin HIV/AIDS Program	http://www.dhfs.state.wi.us/AIDS-HIV/Resources/Overviews/AIDS HIV.htm
Food and Drug Administration (FDA)	http://www.fda.gov
Safety Information and Adverse Event Reporting System (FDA-AERS)	http://www.fda.gov/medwatch
FDA and CDC Public Health Advisory: Infections from Endoscopes Inadequately Reprocessed by an Automated Endoscope Reprocessing System	http://www.fda.gov/cdrh/safety/endoreprocess.html

Regional Training and Medical Consultation Centers

Francis J. Curry National Tuberculosis Center, San Francisco, California	http://www.nationaltbcenter.edu
Heartland Regional Training Center, San Antonio, Texas	http://www.dshs.state.tx.us/tcid/educationctr.shtm
New Jersey Medical School National Tuberculosis Center Newark, New Jersey	http://www.umdnj.edu/ntbcweb
Southeast Regional Training Center, Gainesville, Florida	http://sntc.medicine.ufl.edu/index.htm

Domestic Organizations

American Lung Association (ALA)	http://www.lungusa.org/diseases/lungtb.html
American Thoracic Society (ATS)	http://www.thoracic.org
Association for Professionals in Infection Control and Epidemiology, Inc. (APIC)	http://www.apic.org
HIV Drug Interactions Organization	http://www.hiv-druginteractions.org
Infectious Disease Society of America/Bioterrorism and Information Resources (IDSA)	http://www.idsociety.org/bt/toc/htm
National Prevention Information Network (NPIN)	http://www.cdcnpin.org/scripts/index.asp
National Tuberculosis Controllers Association (NTCA)	http://www.ntca-tb.org
PharmWeb: Rapid Screening of Tuberculosis Pharmaceuticals	http://www.pharmweb.net/pwmirror/library/pharmwebvlib.html

International Organizations

International Union Against Tuberculosis and Lung Disease (IUATLD)	http://www.iuatld.org/full_picture/en/frameset/frameset.phtml
Stop TB Initiative	http://www.stoptb.org
Tuberculosis Research Center, India	http://www.trc-chennai.org
World Health Organization (WHO) Global TB Program	http://www.who.int/gtb

Appendix E. (*Continued*) Tuberculosis (TB) Internet addresses

State/Area TB and HIV Websites

Alabama ..... http://www.adph.org
Arkansas ..... http://www.epi.alaska.gov
Arizona ..... http://www.hs.state.az.us/phs/oids/tuberculosis/index.htm
California ..... http://www.dhs.ca.gov/ps/dcdc/TBCB/tubindex.htm
Colorado ..... http://www.cdphe.state.co.us/dc/tb/tbhome.asp
Connecticut ..... http://www.dph.state.ct.us
Delaware ..... http://www.state.de.us/dhss/dph/dpc/tuberculosis.html
Florida ..... http://www.doh.state.fl.us/disease_ctrl/tb/WorldTBDay/2004/WTD2004main.html
Georgia ..... http://www.health.state.ga.us/epi
Hawaii ..... http://www.hawaii.gov/doh/resource/comm_dis/tb/index.htm
Iowa ..... http://www.idph.state.ia.us/ch/tb_control.asp
Indiana ..... http://www.in.gov/isdh/programs/tb
Kansas ..... http://www.kdhe.state.ks.us/tb/index.html
Kentucky ..... http://www.chs.state.ky.us/publichealth/TB.htm
Louisiana ..... http://www.oph.dhh.state.la.us/tuberculosis/index.html
Massachusetts ..... http://www.state.ma.us/dph/cdc/tb
Maryland ..... http://www.edcp.org/tb/index.html
Maine ..... http://www.maine.gov/dhs/boh/ddc/tuberculosis.htm
Michigan ..... http://www.michigantb.org
Minnesota ..... http://www.health.state.mn.us/tb
Montana ..... http://www.dphhs.state.mt.us
North Carolina ..... http://www.schs.state.nc.us/epi/tb
North Dakota ..... http://www.ndmtb.com
Nebraska ..... http://www.hhs.state.ne.us/cod/Tuberculosis/tbindex.htm
New Hampshire ..... http://www.dhhs.state.nh.us/DHHS/DHHS_SITE/default.htm
Nevada http://www.health2k.state.nv.us
New York City ..... http://www.nyc.gov/html/doh/html/tb/tb.html
Ohio ..... http://www.odh.state.oh.us
Oklahoma ..... http://www.health.state.ok.us
Oregon ..... http://www.dhs.state.or.us/publichealth/tb
Pennsylvania ..... http://www.dsf.health.state.pa.us
Puerto Rico ..... http://www.salud.gov.pr
Rhode Island ..... http://www.health.ri.gov/disease/communicable/tb_data.htm
South Carolina ..... http://www.scdhec.net/hs/diseasecont/tb/html
South Dakota ..... http://www.state.sd.us/doh/tb
Tennessee http://www2.state.tn.us/health/CEDS/index.htm
Texas ..... http://www.dshs.state.tx.us/idcu/disease/tb
Utah ..... http://health.utah.gov/els/hivaids/tb/tbrefugee.html
Virginia ..... http://www.vdh.virginia.gov/epi/tb
Washington ..... http://www.doh.wa.gov/cfh/tb
Wisconsin ..... http://dhfs.wisconsin.gov/tb
Wyoming ..... http://www.wdh.state.wy.us/tb

Name city and county	Community TB rate		State TB rate	National TB rate	
	# cases	Case rate =___ / 100,000	Case rate = __/100,000	# cases	Case rate

Tuberculosis Exposure Control Plan for Low Risk Dental Offices

A. BACKGROUND

According to the CDC, approximately one-third of the world's population, almost two billion people, are infected with tuberculosis. There are about eight million new cases annually, and approximately three million people die every year throughout the world. In the United States, the number of cases has steadily declined in the past ten years, and it's estimated that there are about 15,000 cases of active tuberculosis every year.

Tuberculosis is a contagious disease that mainly causes infections of the lung but can also occur in other areas of the body. Some of the symptoms are fatigue, weight loss, fever, hoarseness, chest pain, night sweats, loss of appetite, persistent cough and shortness of breath, which may result in serious respiratory illness or death.

B. POLICY

The goal of a TB infection control plan is to control occupational exposure to the TB bacteria.

Exposure control will be carried out through:

1. The identification and subsequent referral of suspected TB source cases;
2. Reporting of all exposure incidents and subsequent evaluations;
3. TB skin test screening or blood tests and/or radiological exams; and
4. Training.

This program will establish office policies regarding TB exposure and will help to protect the health and safety of employees that may come in contact with infected individuals.

C. EXPOSURE CONTROL PLAN

1. Employees
   a. New Employees

      New employees should undergo TB skin tests or blood tests. Anyone who tests positive must submit to a chest ray and a medical evaluation to determine the status of the disease. If the chest X-ray reveals an active TB condition, the individual will be referred to their medical advisor for treatment. Any employees with active TB cannot return to work until they are cleared by the doctor.

   b. Current Employees

      Since we work in a low risk environment, as defined by the CDC (less than 3 patients with active TB are seen within the past year), we do not need to undergo annual testing. Instead, we generally only need to undergo testing in the event of an exposure incident.

      However, if an employee begins to exhibit symptoms of infectious TB, she may be asked to undergo testing, and if the tests are positive, the individual will be referred to their medical advisor for evaluation and treatment. Any employees with active TB cannot return to work until they are cleared by their doctor .

2. Exposure Reporting

In the event of an exposure incident, either from an infected patient or infected employee, all employees and patients who may have been exposed must be notified so they may be tested and evaluated.

The CDC requires that all suspected cases of infectious TB be reported to the local health department.

3. Identifying patients who may have infectious TB

One of the most important methods of identifying patients who may have an active TB infection is regularly updating medical histories. All patients should be asked if they have every had active TB or a latent/dormant TB infection, whether they have HIV or a compromised immune system, and whether they have any symptoms of active TB infection.

4. Procedures to follow with a suspected or confirmed TB patient

If you encounter a patient with possible symptoms of active TB, the most important goal is to get the potentially infected patient out of your office as quickly as possible. Once they are out of your office, they should be reported to the CDC for followup and so that all individuals they may have exposed can be notified.

Put the patient in a separate area away from other patients and employees while evaluating him for possible infectiousness, put the patient in a mask and make sure he observes correct “cough etiquette”, including turning his head away from other people and coughing into a tissue or cloth. Postpone any non-urgent dental care, and refer any urgent care to a facility with the correct level of respiratory protection, which includes reverse airflow, well-fitting respirators for all personnel, and correct administrative controls and procedures. Once the patient has been cleared by his medical doctor, he can return for treatment at your office.

5. Training

Tuberculosis awareness training shall be provided to all new employees. Training shall consist of the following subject matter:

a. Factors that place individuals at risk;
b. How TB is transmitted and the difference between TB infection and active disease, including info on drug resistant forms of the disease;
c. Symptoms of TB
d. TB Exposure Control Plan
e. TB testing and procedures

6. Personal Protective Equipment (PPE) use.

We do not work in a facility that has adequate protection against airborne pathogens such as TB. (We don’t have rooms with reverse airflow/negative pressure, we

don’t use respirators, etc.) Our masks are not respirators and do not offer the level of protection needed to protect us from TB disease; in order to safely treat a TB patient, you must have a respirator of at least N95 filtration efficiency. That is why it is so important that any suspected TB patients be removed immediately from the office environment.

TB Information for Healthcare Workers

(from MMWR, December 30, 2005 / Vol. 54 / No. RR-17)

M. tuberculosis is a bacterium carried in airborne infective droplet nuclei that can be generated when persons with pulmonary or laryngeal TB sneeze, cough, speak, or sing (439). These small particles (1--5 µm) can stay suspended in the air for hours (440).

Infection occurs when a susceptible person inhales droplet nuclei containing M. tuberculosis, which then travel to the alveoli of the lungs. Usually within 2--12 weeks after initial infection with M. tuberculosis, immune response prevents further spread of the TB bacteria, although they can remain alive in the lungs for years, a condition termed latent TB infection. Persons with latent TB infection usually exhibit a reactive tuberculin skin test (TST), have no symptoms of active disease, and are not infectious. However, they can develop active disease later in life if they do not receive treatment for their latent infection.

Approximately 5% of persons who have been recently infected and not treated for latent TB infection will progress from infection to active disease during the first 1--2 years after infection; another 5% will develop active disease later in life. Thus, approximately 90% of U.S. persons with latent TB infection do not progress to active TB disease. Although both latent TB infection and active TB disease are described as TB, only the person with active disease is contagious and presents a risk of transmission. Symptoms of active TB disease include a **productive cough, night sweats, fatigue, malaise, fever, and unexplained weight loss**. Certain immunocompromising medical conditions (e.g., HIV) increase the risk that TB infection will progress to active disease at a faster rate (441). Overall, the risk borne by DHCP for exposure to a patient with active TB disease is probably low (20,21). Only one report exists of TB transmission in a dental office (442), and TST conversions among DHCP are also low (443,444). However, in certain cases, DHCP or the community served by the dental facility might be at relatively high risk for exposure to TB.

Surgical masks do not prevent inhalation of M. tuberculosis droplet nuclei, and therefore, standard precautions are not sufficient to prevent transmission of this organism. Recommendations for expanded precautions to prevent transmission of M. tuberculosis and other organisms that can be spread by airborne, droplet, or contact routes have been detailed in other guidelines (5,11,20).

TB transmission is controlled through a hierarchy of measures, including administrative controls, environmental controls, and personal respiratory protection. The main administrative goals of a TB infection-control program are early detection of a person with active TB disease and prompt isolation from susceptible persons to reduce the risk of transmission. Although DHCP are not responsible for diagnosis and treatment of TB, they should be trained to recognize signs and symptoms to help with prompt detection.

Because potential for transmission of M. tuberculosis exists in outpatient settings, dental practices should develop a TB control program appropriate for their level of risk (20,21). A community risk assessment should be conducted periodically, and TB infection-control policies for each dental setting should be based on the risk assessment. The policies should include provisions for detection and referral of patients who might have undiagnosed active TB; management of patients with active TB who require urgent dental care; and DHCP education, counseling, and TST screening. DHCP who have contact with patients should have a baseline TST, preferably by using a two-step test at the beginning of employment. The facility's level of TB risk will determine the need for routine follow-up TST. While taking patients' initial medical histories and at

periodic updates, dental DHCP should routinely ask all patients whether they have a history of TB disease or symptoms indicative of TB.

- Patients with a medical history or symptoms indicative of undiagnosed active TB should be referred promptly for medical evaluation to determine possible infectiousness. Such patients should not remain in the dental-care facility any
- longer than required to evaluate their dental condition and arrange a referral. While in the dental health-care facility, the patient should be isolated from other patients and DHCP, wear a surgical mask when not being evaluated, or be
- instructed to cover their mouth and nose when coughing or sneezing.
- Elective dental treatment should be deferred until a physician confirms that a patient does not have infectious TB, or if the patient is diagnosed with active TB disease, until confirmed the patient is no longer infectious.
- If urgent dental care is provided for a patient who has, or is suspected of having active TB disease, the care should be provided in a facility (e.g., hospital) that provides airborne infection isolation (i.e., using such engineering controls as TB
- isolation rooms, negatively pressured relative to the corridors, with air either exhausted to the outside or HEPA-filtered if recirculation is necessary). Standard surgical face masks do not protect against TB transmission; DHCP should use
- respiratory protection (e.g., fit-tested, disposable N-95 respirators).
- **Settings that do not require use of respiratory protection because they do not treat active TB patients and do not perform cough-inducing procedures on potential active TB patients do not need to develop a written respiratory**
- **protection program.**
- Any DHCP with a persistent cough (i.e., lasting >3 weeks), especially in the presence of other signs or symptoms compatible with active TB (e.g., weight loss, night sweats, fatigue, bloody sputum, anorexia, or fever), should be evaluated
- promptly. The DHCP should not return to the workplace until a diagnosis of TB has been excluded or the DHCP is on therapy and a physician has determined that the DHCP is noninfectious.

Infection Control Measures

The spread of TB in health care settings can be minimized by implementing CDC recommendations for preventing TB transmission in these settings. The early detection, airborne infection isolation, and treatment of disease in persons with infectious TB are essential to controlling transmission.

TB should be suspected in all persons with symptoms consistent with TB (e.g., cough, fever, night sweats, chills, fatigue, weight loss, or loss of appetite), especially those with confirmed or suspected HIV infection and undiagnosed pulmonary disease. Precautions should be taken to prevent airborne transmission of M. tuberculosis until TB is diagnosed and treated or ruled out.

In general, patients who have suspected or confirmed TB disease should be considered infectious if: (a) they are coughing, undergoing cough-inducing procedures, or have positive sputum smear results for acid-fast bacilli (AFB); and (b) they are not receiving adequate antituberculosis therapy, have just started therapy, or have a poor clinical or bacteriologic response to therapy.

For patients placed under airborne precautions because of suspected infectious TB disease of the lungs, airway, or larynx, airborne precautions can be discontinued when infectious TB disease is considered unlikely and either another diagnosis is made that explains the clinical syndrome, or the patient produces three consecutive negative sputum smears collected in 8- to 24-hour intervals (one should be an early morning specimen). Patients for whom the suspicion of infectious TB disease remains after the collection of three negative sputum smear results should not be released from airborne precautions until they receive standard multidrug antituberculosis treatment (minimum of 2 weeks) and demonstrate clinical improvement.

For these patients, additional diagnostic approaches (e.g., sputum induction) and, after sufficient time on treatment, bronchoscopy may need to be considered. Patients who have drug-susceptible TB of the lung, airway, or larynx, should remain under airborne precautions until they produce three consecutive negative sputum smears collected in 8- to 24-hour intervals (one should be an early morning specimen), and receive standard multidrug antituberculosis treatment (minimum of 2 weeks), and demonstrate clinical improvement.

Precautions should be taken during and immediately after procedures that may induce coughing, such as bronchoscopy, sputum collection, the aerosol induction of sputum, and the administration of aerosolized medication, such as pentamidine. Antituberculosis drug treatment should be promptly initiated for persons with TB disease to render them noninfectious. Persons at high risk for LTBI should be tested and, if infected, evaluated for LTBI treatment. Ongoing TB testing should be provided to health care workers who have regular contact with persons with TB or HIV infection.